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Reminder of important clinical lesson

Drug induced neutropaenia – a trigger for necrotising fasciitis?

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Summary

The authors present a case of necrotising fasciitis of the peristomal area, in a patient who had undergone a previous ileostomy for ulcerative colitis. This was associated with neutropaenia, secondary to carbimazole, which had been commenced a few weeks previously for thyrotoxicosis. The authors therefore, stress the importance of monitoring patients closely for possible side effects and complications, while they are on immunosuppressive medication.

BACKGROUND

This case report stresses the importance of monitoring patients closely for possible side effects and complications, while they are on immunosuppressive medication. Necrotising fasciitis (NF) must be considered in immunosuppressed and neutropenic patients with fever, tachycardia and localised pain out of proportion to the physical findings.

It also serves a reminder that an ileostomy can be the initial source of infection in patients who develop NF.

CASE PRESENTATION

A 28-year-old man presented with sudden onset abdominal pain and a non-functioning ileostomy. This was associated with discolouration of the skin surrounding his stoma over the preceding few hours. He underwent a subtotal colectomy with an end ileostomy 2 years previously for ulcerative colitis, and had been commenced on carbimazole a few weeks previously for thyrotoxicosis. On examination, he had a systolic blood pressure of 70 mms mercury and a pulse rate of over 120 per min. His ileostomy appeared necrotic and a purplish discolouration of the surrounding abdominal wall, extending towards both flanks, was noted.

INVESTIGATIONS

He was neutropaenic, with a white cell count of 1.8 and a neutrophil count of 0.8. An arterial blood gas showed a metabolic acidosis with an elevated lactate of 9.2. Free thyroxine was less than 5.2 and thyroid stimulating hormone was 62.23, suggesting over-suppression of thyroid function.

TREATMENT

After a short period of fluid resuscitation and further optimisation in the intensive care unit (ITU), he underwent a laparotomy, where extensive gas and fluid was found in the abdominal wall extending to the flanks suggestive of NF. A gangrenous segment of small bowel involving the ileostomy was also noted. The abdominal wall was extensively debrided, and after resection of the affected small bowel, the ileostomy was re sited in the left iliac fossa. The rectus sheath was closed but the skin was left open with a temporary dressing to enable a planned re-look in 24 h. However, within 2 h of return from theatre, further patches of crepitus and necrosis were noted in his left knee, left calf, right knee and right shoulder, for which he underwent further surgical debridement.

OUTCOME AND FOLLOW-UP

Over the next few days, he was managed in the ITU with both ventilatory and cardiovascular support, as well as further surgical debridement of new areas of necrosis. Figure 1 shows a diagram of the final skin loss. Microbiological swabs revealed *Clostridium ramosum* associated with scanty growth of Staphylococci, Streptococci, *E. coli* and Enterococci. These were treated with a combination of intravenous antibiotics. When stable, he was transferred to the regional plastic surgery centre, where he underwent further debridement and subsequent successful skin grafting. He was re-commenced on a lower dose of carbimazole (20 mg) while in hospital, with no adverse effect. He was finally discharged from hospital 3 months following his initial admission.

DISCUSSION

NF is a rapidly spreading infection of the skin and subcutaneous tissues and has a high morbidity and mortality.[1] Risk factors include diabetes, malignancy, alcohol abuse, chronic liver or kidney disease, extremes of age, immunosuppression and chickenpox[2 3]. The likely source of infection (ileostomy) in our patient, and the association with carbimazole induced neutropaenia has not been reported in literature before.

C ramosum, associated with scanty growth of Staphylococci, Streptococci, *E.coli* and Enterococci were the causative microorganisms in our patient. A mixed polymicrobial infection such as this is often associated with Type I NF, which has been reported in patients with a degree of immunocompromise, as was our patient. *C ramosum* is a gram-positive intestinal anaerobe,[4] and the presence of this organism and the other associated bowel organisms suggest this patient's stoma may have been the initial source of infection.

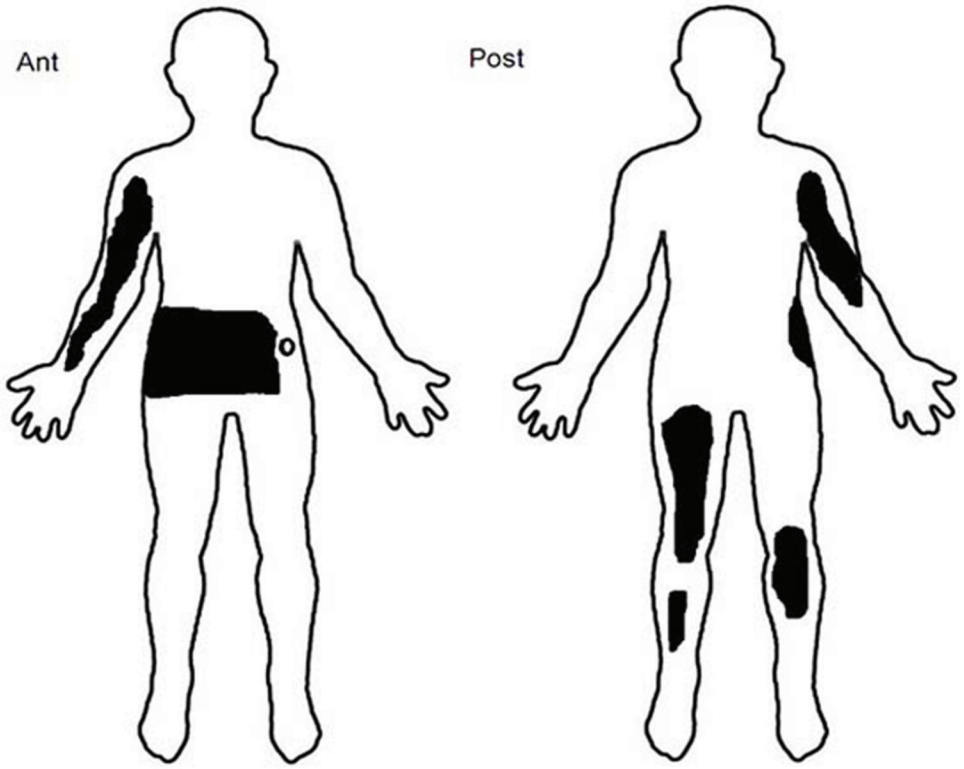

Figure 1 Diagram of the final skin loss.

An ileostomy as a source of NF is rare. An extensive search of literature found only one case report.[5] Colostomy is however recognised as a cause of NF[6] and indeed can present some time after formation of the stoma. It is possible that damage to the skin from appliances and faecal excoriation is a pathway for bacterial entry.

While hyperthyroidism has not been reported as a cause of NF, a correlation with immunosuppression has been documented.[7] Many case reports, largely within the paediatric oncology population, have linked NF among leukaemia patients who were neutropaenic secondary to chemotherapy.[8] There has also been a case of a neutropaenic adult patient who contracted periorbital NF following chemotherapy for breast cancer.[9] Carbimazole, which is commonly used in the management of hyperthyroidism, carries the risk of bone marrow suppression.[10] This in turn can lead to neutropaenia. Current advice on carbimazole therapy suggests checking the full blood counts only if symptoms occur.

The diagnosis of NF must be considered in any neutropaenic patient with fever, tachycardia and localised pain out of proportion to the physical findings. Management is based on a combination of early and aggressive surgical intervention and appropriate supportive treatment. Once the diagnosis is established, debridement of the affected tissues must be of primary concern, with only secondary consideration given to long term function and cosmesis. Tissue must be sent for microbiological culture and histopathology to confirm the diagnosis and to guide antibiotic choices.

While NF affecting the peristomal area is rare but known, it is more common in individuals who are immunosuppressed, as with NF affecting other sites. It is therefore essential that patients who are on medication that can cause immunosuppression must be monitored closely for possible side effects and complications. Early diagnosis, combined with aggressive surgical therapy and a multidisciplinary approach, is crucial to obtain good results in these patients.

Learning points

- All patients on immunosuppressive medication must be monitored carefully for possible side effects and complications.
- NF must be considered in immunosuppressed and neutropenic patients with fever, tachycardia and localised pain out of proportion to the physical findings.
- An ileostomy or colostomy can be the initial source of NF in patients with neutropenia.
- A combination of aggressive surgical debridement and intensive medical therapy is necessary to obtain good results in patients with NF.

Competing interests None.

Patient consent Obtained.

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